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A Message from the Chair

One and a half million Texans have diabetes, but more than 500,000 of them don't know it yet. Diabetes follows a stealthy course in many individuals who develop the disease. Sooner or later, however, diabetes demands attention in ways that are impossible to ignore.

Diabetes – the body's inability to use sugar from the blood properly – is one of the most serious public health problems in Texas today. Complications of diabetes are related to circulation problems that damage blood vessels and result in damaged limbs and organs. Diabetic complications affecting the nervous system range from impaired sensation in the extremities to lower limb amputations. Heart disease, high blood pressure, and strokes are more prevalent in people with diabetes. Diabetes is the leading cause of kidney disease and blindness in adults 20 to 74 years old. And, although diabetes is the sixth leading cause of death listed on Texas death certificates, experts caution it is grossly under-reported.

As grim as these statistics are, Texas faces even more daunting prospects as our fast-growing state becomes increasingly populated by ethnic minorities who have been identified as being at higher risk for developing the disease. At the same time, Texans' increased reliance on "fast" food and increasingly sedentary work and lifestyles contribute to a population that is growing more overweight or obese – leading contributors to type 2 diabetes. And now Texas must grapple with the troubling trend of increased risk for type 2 diabetes in adolescents. More Texas youth are being diagnosed with what was once viewed as an adult disease, giving rise to potentially serious complications by the time these children reach their thirties.

Early identification and diligent disease management can delay the development of complications for years. But left under-treated, diabetes can take a destructive course with disabling effects on the body's major organs and systems.

Education and efforts to encourage Texans to maintain healthy eating habits and become more physically active and fit bring the biggest return in terms of prevention. With that impetus, the Legislature last session passed several bills aimed at promoting healthier, more active lifestyles for Texans – including the requirement that Texas elementary school students participate in physical activity 30 minutes daily or at least 135 minutes weekly.

In pursuing its vision of a Texas free of diabetes and its complications, the Texas Diabetes Council has established goals in six priority areas to achieve its mission of reducing the health and economic burdens of diabetes in Texas. Underlying each priority is the need to educate Texans – the health care team professionals who treat diabetes, patients with the disease, schools, community organizations, and statewide policy makers – about both the dire consequences we face should we fail to act to prevent this worsening spiral of diabetes and the promising strategies that can delay or prevent the onset of some cases and most of the complications. For those in whom diabetes cannot be prevented, we must marshal Texas talents and resources – self-care education, adequate supplies and medications, timely and thorough checkups, and care to help them live well with diabetes.

Until research provides a cure for diabetes, constant efforts to increase awareness, knowledge, and skills – in our health sciences schools, our private and community health centers, our schools, and our local and state government – are crucial to our success in controlling this destructive disease.

We have brought diabetes out of the shadow of obscurity and now focus on actions to limit the ravages that diabetes can bring. The economic costs of lost productivity, the health care costs of life-threatening complications, and the personal costs of limited fulfillment are costs our state can ill afford to pay.

Lawrence B. Harkless, DPM, Chair
Texas Diabetes Council

Texas Diabetes Council Vision and Mission

Vision

A Texas free of diabetes and its complications

Mission

To effectively reduce
the health and economic burdens
of diabetes in Texas

Texas Diabetes Council

20 Years of Progress

The Texas Legislature created the Texas Diabetes Council 20 years ago, in 1983. To commemorate this milestone, this booklet includes a timeline that highlights some of the Diabetes Council's many accomplishments.

The Diabetes Council's members are appointed by the Governor and confirmed by the State Senate. Since its inception, the Diabetes Council has worked with private and public health care organizations to promote diabetes prevention and awareness throughout the state, with particular focus on professional and patient education and public awareness. The Diabetes Council also advises the Legislature on laws needed to further education and health care services for people with diabetes.

A full description of the legislation creating the Texas Diabetes Council and a complete list of its members are included in Appendix 1, page 34.

1983

- **Special Committee on Diabetes Services in Texas submits report to the Texas Legislature.** Among its findings:
  - No state or private standards for diabetes training in self management exist and
  - Insurance does not reimburse for education services unless hospitals or doctors charge under other reimbursable expenditures.

  The Special Committee recommends the creation of the Texas Diabetes Council to improve the provision of services to people with diabetes and their families.
- **The 68th Texas Legislature passes Senate Bill 215, creating the Texas Diabetes Council** and charges it with developing a state plan to combat diabetes, focusing on health promotion and disease prevention.

1984

- **The Diabetes Council and the Texas Department of Health work with the American Diabetes Association and other states to conduct a pilot study of the National Standards for Diabetes Education.** The study includes 10 sites in Texas. As a result of this national study, standards, review criteria, and a recognition process to certify providers are established.

1985

- **The Diabetes Council submits its first state plan for diabetes treatment, education, and training to the 69th Texas Legislature.**

1986

- **TDH receives a grant from the Centers for Disease Control and Prevention** to support the state's first diabetes control project.
- **The Diabetes Council appoints a Task Force for Third Party Reimbursement** and develops a proposal for Medicare reimbursement for diabetes patient education.
- **Diabetes Council members review and make recommendations regarding diabetes** to the publishers of proposed high school health textbooks for Texas public schools.
- **The Diabetes Council passes a resolution regarding the need to provide appropriate diets for people who have diabetes and are incarcerated in Texas Department of Corrections facilities.**

- **The Diabetes Council works with the State Board of Insurance to gather data for an analysis of high risk pools and coverage of diabetes outpatient education.**
- **The Diabetes Council provides the Crippled Children's Program information** regarding coverage of children with diabetes.
- **The Diabetes Council helps organize a joint panel of professionals from the United States and Mexico** for the annual meeting of the US-Mexico Border Health Association in Monterrey.
- **Responding to a request by the chairman of the Medical Advisory Board for Drivers Licensing, the Diabetes Council helps develop improved guidelines for granting drivers licenses to people who have diabetes.**

1987

- **The Health Care Financing Administration endorses the Diabetes Council's proposal that Medicare provide reimbursement for diabetes patient education.** As a result, diabetes outpatient education is more accessible to more than 130,000 persons with diabetes over 65 years of age.
- **In partnership with the Hogg Foundation, the American Diabetes Association-Texas Affiliate, and the Geriatric Education Center at the University of Texas Health Science Center in San Antonio, the Diabetes Council co-sponsors the first statewide conference** addressing the problem of diabetes among Texas' Mexican-American population.

1989

- **For the first time, the Texas Legislature appropriates $750,000 per year** to support recommendations in the State Plan to Control Diabetes.
- **The Diabetes Council launches the Diabetic Eye Disease Program** to help prevent blindness through early identification of diabetic eye disease in people who lack other resources.

1990

- **With funding from the CDC, the Diabetes Council establishes Diabetes Complication Intervention Grant Sites,** located in community health centers and local health departments that serve low-income patients.
- **The Diabetes Council co-sponsors "Diabetes Among Mexican Americans: Challenge to Action,"** a regional conference for more than 300 health professionals to increase awareness and understanding of diabetes.

1991

- **The Diabetes Council and the American Diabetes Association sponsor "Diabetes Day at the Capitol,"** an awareness event for legislators, with more than 100 supporters on hand.

1993

- **The Texas Legislature appropriates $3.75 million for the Diabetes Council** to expand community programs, promote public awareness, foster expanded diabetes self-care education programs, and support physician continuing education in diabetes.
- **The Diabetes Council funds establishment of the Texas Diabetes Institute,** a center of excellence to provide medical care, patient and professional education, and clinical research.
- **The Diabetes Council publishes and distributes** *You Have the Power: Controlling Diabetes One Day at a Time*, a comprehensive diabetes education manual for health professionals' use in teaching self-management techniques to people who have diabetes.

1994

- **The Diabetes Council contracts with an advertising and public relations firm to develop and execute its first public awareness campaign.**
- **In partnership with the American Diabetes Association, the Diabetes Council launches "Operation: Defeat Diabetes in Texas" in Corpus Christi.** The program's goals

are to (1) reduce diabetes-related illness and death by improving diabetes care through professional and patient education and (2) promote early diagnosis of diabetes through aggressive public awareness efforts.

- **In cooperation with the American Diabetes Association-Texas Affiliate, the Diabetes Council funds four sites** for the Diabetes Assistance and Resources Program. DARP serves the Hispanic population age 45 to 74 and trains volunteers to give home health parties that focus on the prevention and control of diabetes.

1995

- **The Diabetes Council convenes representatives of major managed care organizations, employer organizations, grocery/pharmacy chains, pharmaceutical companies, medical schools, and government agencies** to form the Managed Care Work Group. The Group develops minimum standards of care and education that should be followed when treating patients who have diabetes.
- **The American Diabetes Association-Texas Affiliate implements the Diabetes Information and Action Line (DIAL).** The Diabetes Council provides funding for the development of a computerized information delivery system that lists diabetes resources in Texas. Texas is the first state to offer state-specific information about diabetes services.
- **The Diabetes Council commissions a study of the direct and indirect costs of diabetes in Texas** by the LBJ School of Public Affairs, The University of Texas at Austin.

1996

- **The Diabetes Council launches "Walk Texas!"** to increase physical activity levels among adult populations throughout Texas.

1997

- **The Diabetes Council adopts the Coordinated Approach to Child Health (CATCH)** and invites schools to become CATCH Texas Schools. The Diabetes Council makes CATCH resource materials available to 400 schools at significantly reduced cost and offers free regional trainings.
- **The Texas Legislature passes Senate Bill 162** requiring the Insurance Commissioner, in consultation with the Texas Diabetes Council, to develop minimum standards for health care benefits provided to people who have diabetes.
- **The Texas Legislature passes Senate Bill 163,** requiring health benefit plans that pay for treatment of diabetes and associated conditions to cover the cost of diabetes equipment, supplies, and self-management training programs.

1998

- **The Centers for Disease Control and Prevention awards the Texas Diabetes Council/Program $771,057.** Texas is one of only eight states to receive this level of funding.
- **With support from the Diabetes Council, the Texas Department of Health adopts rules providing coverage of diabetes testing supplies to all Medicaid recipients.** This coverage previously was available only to homebound recipients.

1999

- **TDH and the Juvenile Diabetes Research Foundation International host an international workshop** to address type 2 diabetes in children and adolescents.
- **The Diabetes Council, TDH, and Bristol-Myers Squibb Company form the Texas Diabetes Prevention and Control Initiative.** The public-private partnership initiative includes public screenings to detect diabetes, education for health care providers, and activities to alert the public to diabetes signs and symptoms and help those with diabetes manage their disease.
- **With assistance from the Diabetes Council, Type 2 Diabetes in Children and Adolescents Work Group holds its first meeting.**

2000

- **The Governor declares Diabetes Prevention and Control Initiative Day** in recognition of the project initiated by the Diabetes Council and Bristol-Myers Squibb Company.
- **The Diabetes Council launches the Capacity and Infrastructure Development (CID) project** to support the improvement of diabetes care in community health centers and the reduction of health disparities.

2001

- **The Type 2 Diabetes in Children and Adolescents Work Group publishes two documents:** "Type 2 Diabetes in Children and Adolescents Statewide Action Plan" and "Putting the Brakes on Diabetes: A Community Planning Guide to Improve Health and Nutrition for Texas Children and Adolescents and Reduce the Risk of Type 2 Diabetes."
- **With assistance from the Diabetes Council, the Centers for Disease Control and Prevention launches a five-year project** to (1) determine the prevalence of diabetes among the US-Mexico border population and (2) develop binational diabetes prevention and control interventions. This marks the first endeavor to examine the US-Mexico border region as an epidemiological unit.
- **With guidance and support from the Diabetes Council, the Texas Legislature creates the Pediatric Diabetes Research Advisory Committee to:**
  - Research pediatric diabetes and medical conditions associated with diabetes,
  - Assess state institutions as possible sites for research opportunities,
  - Analyze the impact of diabetes on the economy and public health, and
  - Make recommendations to state officials concerning research programs and funding options.
- **Taking advantage of cost-effective technology, the Diabetes Council produces a continuing medical education video** for primary care physicians and also makes it available on the internet.

2002

- **With support from the Diabetes Council, the State Board of Education adopts rules requiring daily physical activity** for elementary school children in Texas, a step to reduce obesity, which is a risk factor for type 2 diabetes.
- **With support from the TDH Diabetes Program staff and the participation of the Texas Diabetes Council,** the Pediatric Diabetes Research Advisory Committee submits recommendations to the Governor, the Lieutenant Governor, and the Speaker of the House of Representatives.

Executive Summary

Toward a Texas Free of Diabetes: A Plan to Prevent and Control Diabetes in Texas

Toward a Texas Free of Diabetes: A Plan to Prevent and Control Diabetes in Texas brings new words of warning to the Texas Legislature and Texas citizens about the challenges we face from the growing health threat of diabetes and outlines the steps we must take to curtail the reach of this treacherous disease.

The Texas Diabetes Council – charged with developing and implementing a state plan for diabetes treatment, education, and training – has established priorities for actions to prevent or delay the onset of diabetes in our state population and to improve care for those diagnosed with the disease. This document details the plan that the Diabetes Council developed for fiscal years 2004 and 2005 (September 2003 through August 2005) to support activities in these priority areas and reduce the economic impact on our citizens and our state.

The Diabetes Council has identified six priorities in the plan that will guide activities undertaken and supported in the coming biennium: surveillance and evaluation, health care improvement/professional education, service, public health education, public health advocacy, and community outreach and programs. While set at the state level, these priorities return the focus to the local level and lead the way for individuals, health care providers, and community organizations to implement effective practices to reduce the economic, health care, and personal costs of diabetes in our state.

The state allocation for the Diabetes Program's activities was $3,231,259 for fiscal year 2003 – only $2 per person estimated to have diagnosed diabetes in Texas.

In contrast to the Diabetes Program's budget, the estimated direct and indirect costs of diabetes in the state are more than $9 billion annually. In fiscal year 2001, just three state programs – the Texas Rehabilitation Commission, the Texas Commission for the Blind, and the Texas Department of Health Bureau of Kidney Health Care – spent more than $21 million to provide adults with complications of diabetes specialized care or special aids that allow them to continue gainful employment.

The demand for health care dollars and services to treat diabetes and its complications can be expected to

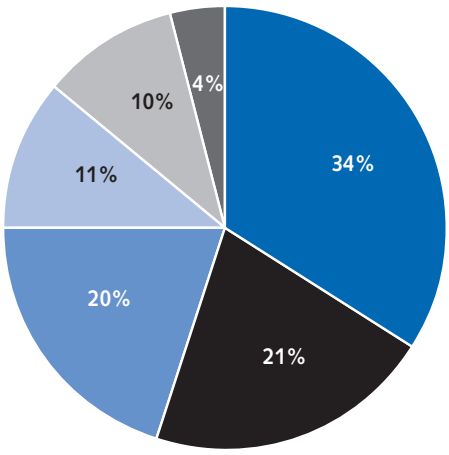


FIGURE 1:
State General Revenue Funds

- Community-based organizations
- Operating (Council, surveillance)
- Other community programs
- Diabetic Eye Disease Program
- Communications and education
- Print materials

TABLE 1:
Cost of Select Services for People with Diabetes, Fiscal Year 2001

AGENCY	NUMBER SERVED	COST
TDH Bureau of Kidney Health Care	2,601	$7,840,538
Texas Rehabilitation Commission	3,359	$2,981,287
Texas Commission for the Blind	3,104	$10,248,807
TOTAL	**NA***	**$21,070,632**

* Not applicable since some individuals are served by more than one agency

increase dramatically in the coming years. The population of Texas is projected to reach 33.8 million by the year 2030. In that same time period, increases in the population of Hispanics and African Americans – who are at significantly higher risk for diabetes – will be dramatic. By 2030 Hispanics and African Americans will make up 63 percent of the state's population, with no one ethnic group constituting a majority. [1] In comparison, the latest US census indicates that people who identified themselves as Hispanic, African American, and "other" accounted for 46.9 percent of the state's population in 2000.

In the face of this staggering increase in the number of Texans who are at higher risk for developing diabetes, the Diabetes Council proposes comparable increases in the funds dedicated to carrying out programs to educate the public and health care professionals about this complex disease, its prevention, management, and complications.

Texas Diabetes Fact Sheet[2]

Diabetes in Children

It is estimated that in the year 2000 there were 13,053 Texans under age 20 who had diabetes.[3]

Prevalence of Diagnosed Diabetes in Adults 18 Years or Older

An estimated 1,055,002 (6.2 percent) adults in Texas have been diagnosed with diabetes.

Prevalence of Undiagnosed Diabetes in Adults 20 Years or Older

Another estimated 503,002 adults in Texas[4] are believed to have undiagnosed diabetes.

Deaths Among People with Diabetes

Based on Texas death certificate data, diabetes contributed to 15,130 deaths in the year 2000. It was the sixth leading cause of death listed on Texas death certificates. Diabetes is believed to be under-reported on death certificates, both as an underlying condition and as a cause of death. A total of 31 Texas counties had mortality rates that were statistically significantly higher than those for the state as a whole during 1994 through 1998. The average mortality rate per county was 17.8 per 100,000 during the same period.

FIGURE 2: Diabetes Mellitus
5-Year Average Age-Adjusted Mortality Rates
1994-1998

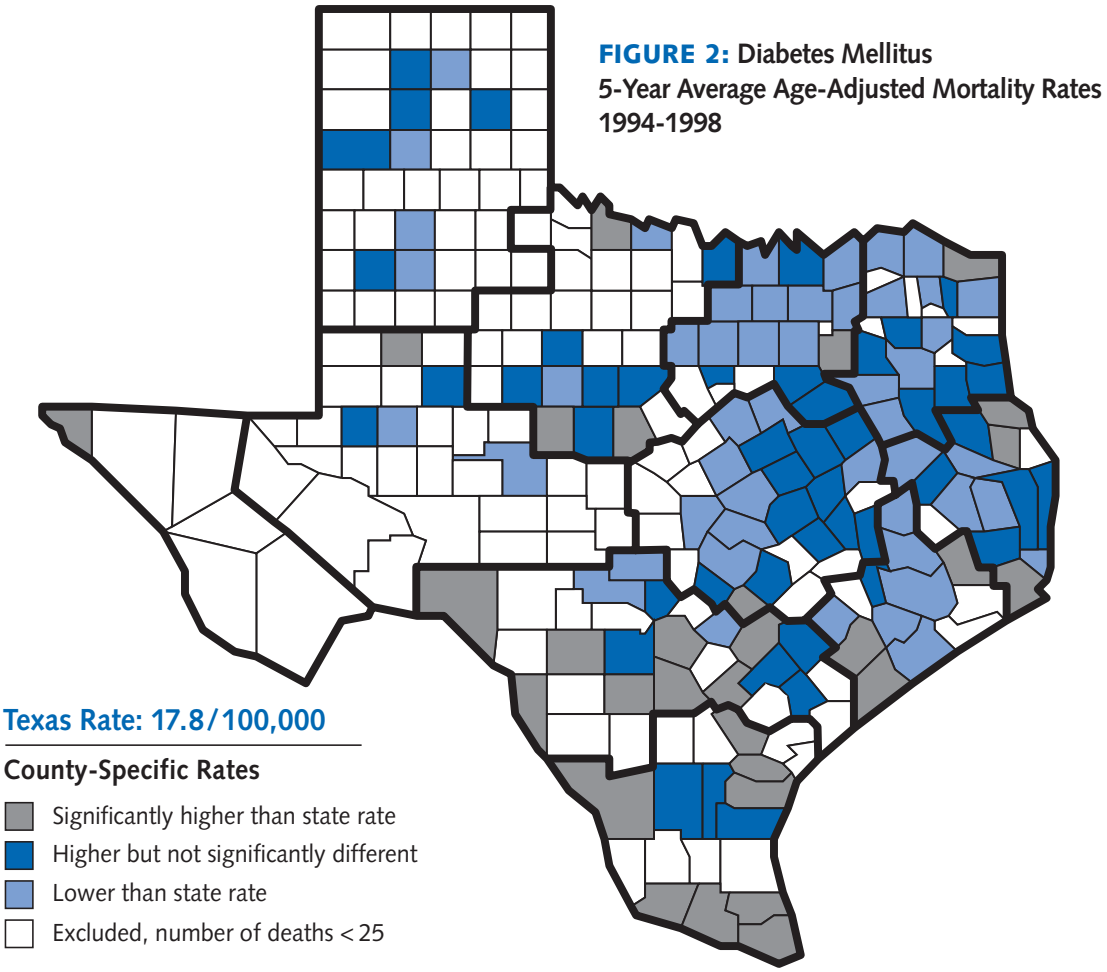


TABLE 2:
Prevalence of Diagnosed Diabetes (Types 1 and 2) by Age

AGE	NUMBER DIAGNOSED	% OF ALL TEXANS THIS AGE
18-29	42,050	1.1
30-44	178,012	3.6
45-64	472,361	10.8
65+	344,619	16.4

TABLE 3:
Prevalence of Diagnosed Diabetes by Gender in Texans 18 Years or Older, 2001

GENDER	NUMBER DIAGNOSED	% OF ALL MALES OR FEMALES
Male	509,159	6.8
Female	535,087	6.9

TABLE 4:
Prevalence of Diagnosed Diabetes by Race/Ethnicity in Texans 18 Years or Older, 2001

RACE/ETHNICITY	NUMBER DIAGNOSED	% OF ALL MEMBERS OF GROUP
Non-Hispanic White	514,977	6.0
African American	163,421	9.7
Hispanic	360,263	8.1
Other	16,341	3.1

TABLE 5:
Texans 18 Years or Older with Diagnosed Diabetes by Race/Ethnicity Who Were Without Health Insurance for Some Portion of 2001

RACE/ETHNICITY	NUMBER DIAGNOSED	% OF ALL PATIENTS WITH DIABETES
Non-Hispanic White	10,300	2.0
African American	14,544	8.9
Hispanic	48,996	13.6

Identifying High Risk

Individuals at high risk for developing type 2 diabetes can be identified through risk assessments at any health care visit. This approach is called opportunistic screening, and the Centers for Disease Control and Prevention recommends it over mass or targeted public screening projects, e.g., health fairs. Diabetes prevention policies that focus on lifestyle modification, specifically to achieve modest weight loss through increased physical activity for people who are overweight, are likely to have health benefits. Public health messages, health care professionals, and health care systems should encourage behavioral habits for a healthy lifestyle. [5]

Scientists are trying to determine the relative influences of genetic risk and lifestyle factors for type 2 diabetes. A six-year study found that low-income Hispanic residents in San Antonio had higher body fat, less physical activity, and diets higher in fat but lower in carbohydrates than Hispanics living in Mexico City. While the two groups had similar genetic characteristics, the Hispanics in San Antonio had a higher prevalence of type 2 diabetes. [6]

Pre-Diabetes

Pre-diabetes is a new word to explain that higher than normal blood sugar levels can progress quickly to type 2 diabetes if action is not taken. It means a person's blood sugar levels are higher than normal, but not high enough for a diagnosis of diabetes. Doctors refer to this state of elevated blood glucose levels as Impaired Glucose Tolerance (IGT) or Impaired Fasting Glucose (IFG), depending on which test is used to detect it.

Pre-diabetes means that one is on the way to developing type 2 diabetes and already may be experiencing the adverse health effects of this serious condition. People with pre-diabetes have a higher risk for cardiovascular disease compared to people with normal blood sugar levels. However, diabetes prevention program studies are finding that obese people with pre-diabetes may be able to delay or prevent the onset of type

2 diabetes through lifestyle changes to reduce excess body weight through physical activity and eating habits.

Preventing or Delaying Type 2 Diabetes

Research on the prevention or delay of type 2 diabetes brings great hope for protecting the health of Texans.

- The Diabetes Prevention Program (DPP) study found substantial evidence that Americans at high risk for type 2 diabetes who improved their diet and increased physical activity to lose a little excess weight could prevent or delay type 2 diabetes. The study defined high risk as blood glucose or sugar higher than normal, but not yet high enough to be diabetes. All participants were overweight, most were obese, and most had a family history of type 2 diabetes.
- The nearly three-year study found that the group of participants who made lifestyle changes to reduce excess body weight lowered their risk of developing type 2 diabetes by 58 percent.
- The lifestyle intervention was effective for adults of all ages and in all ethnic groups.
- The group who received standard care plus the diabetes medication metformin reduced their risk for getting type 2 diabetes by 31 percent.

In this DPP study, the lifestyle change group received intensive nutrition and physical activity counseling. On the average, half of the group achieved the goal of at least a 7 percent weight reduction, and three fourths did at least 150 minutes per week of moderately intense activity. [7]

Impaired Fasting Glucose/Impaired Glucose Tolerance

Impaired Fasting Glucose (IFG) is a fasting plasma glucose value between 110 and 125 milligrams per deciliter (mg/dL) of blood plasma. These glucose values are greater than the level considered normal, but less than the level that is diagnostic of diabetes.

Impaired Glucose Tolerance (IGT) means the same condition but is the term used to describe the result of a blood test administered two hours after a high-glucose drink (oral glucose tolerance test). Some patients may have been told that they had "borderline" diabetes or "high sugar" or "a little sugar," and did not think they needed to take action. But they do need to take action to reduce the risk of developing type 2 diabetes. It is estimated that 1 million Texans – 7 percent of the population – have Impaired Fasting Glucose or Impaired Glucose Tolerance.

Diagnostic Criteria for Diabetes [8]

The routine diagnostic test for diabetes is a fasting plasma glucose test rather than the previously preferred oral glucose tolerance test. However, in certain clinical circumstances, e.g., to identify gestational diabetes, physicians may choose to perform the oral glucose tolerance test.

A confirmed [9] fasting plasma glucose value greater than or equal to 126 milligrams per deciliter (mg/dL) of blood plasma indicates a diagnosis of diabetes. In the presence of signs and symptoms of diabetes, a confirmed, nonfasting, random plasma glucose value greater than or equal to 200 mg/dL indicates a diagnosis of diabetes. A confirmed two-hour glucose value greater than or equal to 200 mg/dL on an oral glucose tolerance test is diagnostic of diabetes.

Four Types of Diabetes

Type 1 diabetes was previously called insulin-dependent diabetes mellitus (IDDM) or juvenile-onset diabetes. Type 1 diabetes develops when the body's immune system destroys pancreatic beta cells, the only cells in the body that make the hormone insulin, which regulates blood glucose. This type of diabetes usually strikes children and young adults who need several insulin shots a day or an insulin pump to survive. Type 1 diabetes may account for 5 to 10 percent of all diagnosed cases of diabetes. Risk factors are less well defined for type 1 diabetes than for type 2 diabetes, but autoimmune, genetic, and environmental factors are involved in the development of this type of diabetes.

Type 2 diabetes was previously called non-insulin-dependent diabetes mellitus (NIDDM) or adult-onset diabetes. Type

2 diabetes may account for 90 to 95 percent of all diagnosed cases of diabetes. Type 2 usually begins as insulin resistance, a disorder in which the cells do not use insulin properly. As the need for insulin increases, the pancreas gradually loses its ability to produce insulin. Risk factors for type 2 diabetes include obesity, family history of diabetes, history of gestational diabetes, Impaired Glucose Tolerance, minimal or no physical activity, and race/ethnicity. African Americans, Hispanics, American Indians, and some Asian Americans and Pacific Islanders are at particularly high risk for type 2 diabetes. Type 2 diabetes is increasingly being diagnosed in adolescents.

Gestational diabetes is a form of glucose intolerance that is diagnosed in some women during pregnancy. Gestational diabetes develops in up to 5 percent of all pregnancies. Gestational diabetes occurs more frequently in African Americans, Hispanics, American Indians, and people with a family history of diabetes. It is also more common among obese women. During pregnancy, gestational diabetes requires treatment to keep the mother's blood sugar levels as normal as possible. After pregnancy, 5 to 10 percent of women with gestational diabetes are found to have type 2 diabetes. Women who have had gestational diabetes have a 20 to 50 percent chance of developing diabetes in the next 5 to 10 years and need to be followed up by primary care providers for their risk.

Other specific types of diabetes result from specific genetic syndromes, surgery, drugs, malnutrition, infections, and other illnesses. Such types of diabetes may account for 1 to 5 percent of all diagnosed cases of diabetes.

Treatment of Diabetes

Diabetes knowledge, treatment, and prevention strategies advance daily. Treatment aims to keep blood glucose near normal levels at all times. Training in self management is integral to the treatment of diabetes. Treatment must be individualized and must address medical, psychosocial, and lifestyle issues.

Treatment of type 1 diabetes:

Lack of insulin production by the pancreas makes type 1 diabetes particularly difficult to control. Treatment requires a strict regimen that typically includes a carefully calculated diet, planned physical activity, home blood glucose testing several times a day, and multiple daily insulin injections.

Treatment of type 2 diabetes:

Treatment typically includes diet control, physical activity, home blood glucose testing, and in many cases, oral medication and/or insulin. Approximately 40 percent of people with type 2 diabetes require insulin injections.

Complications of Diabetes (National Statistics)

Heart Disease

Heart disease is the leading cause of diabetes-related deaths. Adults with diabetes have heart disease death rates about two to four times as high as those of adults without diabetes.

Stroke

The risk of stroke is two to four times higher in people with diabetes.

High Blood Pressure

An estimated 60 to 65 percent of people with diabetes have high blood pressure.

Blindness

Diabetes is the leading cause of new cases of blindness in adults 20 to 74 years old. Diabetic retinopathy causes from 12,000 to 24,000 new cases of blindness each year.

Kidney Disease

Diabetes is the leading cause of end-stage renal disease, accounting for about 43 percent of new cases. More than 38,000 people in the United States began treatment for end-stage renal disease in 1999. That same year, more than 114,000 people with diabetes underwent dialysis or kidney transplantation. In 2001, in Texas, 52.6 percent of the TDH Bureau of Kidney Health's clients had a primary diagnosis of diabetes.

Nervous System Disease

About 60 to 70 percent of people with diabetes have mild to severe forms of nervous system damage, which often

includes impaired sensation or pain in the feet or hands, slowed digestion of food in the stomach, carpal tunnel syndrome, and other nerve problems. Severe forms of diabetic nerve disease are a major contributing cause of lower extremity amputations.

Amputations

More than half of lower limb amputations in the United States occur among people with diabetes. From 1997 to 1999, about 82,000 nontraumatic lower-limb amputations were performed each year among people with diabetes. [10]

Dental Disease

Periodontal disease (a type of gum disease that can lead to tooth loss) occurs with greater frequency and severity among people with diabetes. Periodontal disease has been reported to occur among 30 percent of people aged 19 years or older with type 1 diabetes.

Complications of Pregnancy

The rate of major congenital malformations in babies born to women with pre-existing diabetes is up to 5 percent of women who receive care before pregnancy and up to 10 percent of women who do not receive preconception care. Up to 5 percent of pregnancies among women with diabetes result in death of the newborn. The rate for women who do not have diabetes is 1.5 percent.

Other Complications

Diabetes can directly cause acute, life-threatening events, such as diabetic ketoacidosis [11] and hyperosmolar nonketotic coma. [12] People with diabetes are more susceptible to many other illnesses. For example, they are more likely to die of pneumonia or influenza than people who do not have diabetes.

The estimated direct and indirect costs of diabetes in Texas in 1997 totaled $9.2 billion.

TABLE 6:
Costs of Diabetes in the United States, 1997 [13]

TYPE	AMOUNT
Direct	$44 billion
Indirect	$54 billion
Total	$98 billion

Internet Resources

The following web sites provide more information about diabetes, as well as statistics for the State of Texas and the United States.

American Association of Diabetes Educators
http://www.aadenet.org

American Diabetes Association
http://www.diabetes.org

American Dietetic Association
http://www.eatright.org

Center for Medicare and Medicaid Services
http://cms.hhs.gov

Centers for Disease Control and Prevention
http://www.cdc.gov/diabetes

Department of Veterans Affairs
http://www.va.gov/health/diabetes

Diabetes In Texas: Making A Difference (Videostreamed Continuing Education Activity)
http://www.tdh.state.tx.us/phpep/cme/diabetes

Health Resources and Services Administration
http://www.hrsa.dhhs.gov

National Collaborative to Reduce Health Disparities
http://www.healthdisparities.net

Juvenile Diabetes Research Foundation International
http://www.jdrf.org

National Institute of Diabetes and Digestive and Kidney Diseases of the National Institute of Health
http://www.niddk.nih.gov

National Institute of Diabetes and Digestive and Kidney Diseases Diabetes Dictionary
http://www.niddk.nih.gov/health/diabetes/pubs/dmdict/dmdict.htm

TDH Bureau of Kidney Health Care
http://www.tdh.state.tx.us/kidney/khcmain.htm

Texas Commission for the Blind
http://www.tcb.state.tx.us

Texas Department of Aging
http://www.tdoa.state.tx.us

Texas Department of Insurance
http://www.tdi.state.tx.us

Texas Diabetes Council/Program
http://www.tdh.state.tx.us/diabetes/tdc.htm

Texas Education Agency
http://www.tea.state.tx.us

Texas Health and Human Services Commission
http://www.hhsc.state.tx.us

Texas Health Care Information Council
http://www.thcic.state.tx.us

Texas Rehabilitation Commission
http://www.rehab.state.tx.us

US Department of Health and Human Services Office of Minority Health
http://www.omhrc.gov

"Walk Texas!"
http://www.tdh.state.tx.us/diabetes/walktx/index.html

Texas Diabetes Council: Strategic Plan

Fiscal Years 2004 and 2005

The legislation creating the Texas Diabetes Council charges the group with developing and implementing a state plan for diabetes treatment, education, and training. To fulfill this charge, the Diabetes Council members conduct a strategic planning session every other year to identify goals for the coming biennium. These goals serve as the map for leading Texas into the future and approaching the Diabetes Council's vision of "A Texas Free of Diabetes and its Complications."

PRIORITY: Surveillance & Evaluation

Effective diabetes prevention and control programs depend on valid, reliable data gathered through surveillance and evaluation. These data clarify the magnitude of diabetes in Texas and identify target audiences. This information facilitates the development of culturally appropriate messages. It also guides the distribution of resources to areas of great need related to diabetes. As progress is made toward meeting the following goals, the Texas Diabetes Council expects to increase the reliability of diabetes data, increase participation in diabetes continuing education by physicians, increase the use of best practices by local diabetes programs, and increase the number of children who are identified as being at risk for type 2 diabetes.

Goals:

- Improve current diabetes surveillance tools and acquire others that are needed to provide data related to Healthy People 2010 objectives [14]
- Obtain data regarding the specialties of practicing physicians who manage patients who have diabetes
- Use a uniform evaluation format for community programs to document current practices and identify those that have positive impacts on diabetes control and prevention
- Expand data collection to include children (under the age of 18 years) to facilitate earlier interventions

PRIORITY: Health Care Improvement/Professional Education

The Texas Diabetes Council is committed to assuring that Texans with diabetes receive high-quality care from health care providers who have access to the latest information related to diabetes. Activities related to this priority area include developing, updating, and distributing standards of care that serve as guides for health care providers who treat people who have diabetes. Other activities will support changes in the health care system – including providers, payers, and educators – that promote not only quality care, but also prevention. Among the outcomes of achieving the following goals will be an increase in the use of minimum standards of care for people who have diabetes, a reduction in the overall rate of diabetes, and an increase in the number of qualified diabetes educators.

Goals:

- Adopt, publish, and promote minimum standards of care for type 1 and type 2 (for children and adults) and gestational diabetes based on research evidence
- Promote clinical system changes to identify people who are at risk for pre-diabetes
- Develop, publish, and promote recommended preventive protocols and measures for persons with Impaired Glucose Tolerance (IGT) or at risk for diabetes

- Increase the level of diabetes and pre-diabetes content and expand the required diabetes competencies in education programs for health professionals
- Develop and update algorithms for management of targeted types of diabetes for adults and children
- Encourage health care practices, hospitals, institutions, and academic centers that serve people with diabetes to help their health care professional staff pursue Certified Diabetes Educator (CDE) [15] credentials, particularly in underserved geographic locations

PRIORITY: Service

The Diabetes Council/Program's Diabetic Eye Disease Program (DEDP) helps prevent blindness by providing annual funduscopic examinations to people with diabetes. Proliferative diabetic retinopathy is the leading cause of blindness in the United States among adults 25 to 74 years of age. The DEDP pays for up to three eye examinations in a 12-month period for residents who have incomes below 150 percent of federal poverty level and lack other insurance coverage. The following goal proposes to identify other state agencies and private organizations that also can provide these examinations, thereby increasing the proportion of adults with diabetes who have an annual dilated eye examination.

Goal:

- Identify resources/programs that can provide eye care screenings

PRIORITY: Public Health Education

The National Diabetes Education Program notes that public awareness about diabetes is low, despite the fact that it is one of the leading causes of death and disability in the United States. During fiscal years 2004 and 2005, the Diabetes Council will continue its efforts to reach people who have diabetes (diagnosed and undiagnosed) and who are at risk for diabetes through the media, community-based organizations, and public and private health organizations. As a result, Texans can expect a reduction in the rate of type 2 diabetes and the number of disabling complications and deaths for Texans of all ages.

Goals:

- Educate the general public, including children and adults, about reducing their risk for type 2 diabetes and controlling all diabetes
- Adopt guidelines for safe and appropriate care of children with diabetes in a school setting
- Support the implementation of (1) legislation that addresses physical activity and nutrition for children, including Senate Bill 19 (77th Texas Legislature), [16] and (2) the Texas Education Agency's Food of Minimal Nutritional Value (FMNV) Policy [17]

PRIORITY: Public Health Advocacy

The law creating the Texas Diabetes Council charges its members with advising the Legislature on laws that are needed to develop and maintain a statewide system of quality education services for all people with diabetes. The activities related to the goals in this priority area will address this responsibility and also will seek new opportunities to advocate for people of all ages who have diabetes or are at risk for diabetes. The results of accomplishing these goals will include a reduction in the economic burden of diabetes, an increase in support for people who have or are at risk for diabetes, and a decrease in the incidence of diabetes complications and the death rate from diabetes.

Goals:

- Inform the Legislature of issues affecting people with diabetes
- Analyze proposed legislation related to diabetes
- Improve access to care, education, and supplies for people of all ages who have pre-diabetes and diabetes
- Support diabetes research in Texas, with emphasis on pediatric diabetes

(continued on next page)

PRIORITY: Community Outreach and Programs

Recognizing that Texas includes many diverse communities with unique needs, the Diabetes Council supports local, tailored approaches to accomplishing its goals. A program that is successful for one geographical or ethnic group may or may not work for another group. As individual communities learn from both their successes and failures, the lessons will be shared and adapted for use in other communities as local needs dictate. The outcomes of the following goals will be (1) an increase in the number of successful health promotion activities and (2) environmental changes that support physical activity and healthy nutrition and discourage tobacco use.

Goals:

- Work with community organizations and programs to improve health promotion activities as part of the effort to achieve Healthy People 2010 objectives
- Assure access to better patient care and education by identifying best practices in communities throughout Texas
- Promote appropriate use of community health workers and *promotores*[18] to reinforce and support diabetes education

Activities Update

The Texas Diabetes Program at the Texas Department of Health undertakes and sponsors a number of key activities that support the six priority areas the Texas Diabetes Council has identified in its new state plan. These activities and related accomplishments are described in the following pages. As funding allows, the Program will expand its activities to include those proposed in the state plan for FY 2004 and 2005.

Surveillance and Evaluation

BRFSS

The TDH Diabetes Program contracts for annual statewide telephone surveys using the Behavioral Risk Factor Surveillance System (BRFSS), a population-based method endorsed by the Centers for Disease Control and Prevention. Participants' replies to diabetes questions help state and national agencies estimate the prevalence of diagnosed diabetes and describe the services that people with diabetes recall they have received within the previous year. The sample size is limited due to costs, but the findings are adjusted to represent the population and are helpful for tracking changes over time.

As resources permit, additional surveys can be administered in high-risk counties. For example, the TDH Office of Border Health funded additional BRFSS surveys in select counties along the Mexico border and estimated that more than 10 percent of the adult population have diagnosed diabetes, compared to 6.2 percent statewide.

US-Mexico Border Project

The US-Mexico Border Diabetes Prevention and Control Project is a five-year collaborative project that will determine the prevalence of diabetes along the US-Mexico border. This information will be used to develop binational diabetes prevention and control programs that consider the unique characteristics of the border population. Household surveys were

TABLE 7:
Percent of Respondents Answering "Yes" to BRFSS Diabetes Questions Regarding Services Received in the Previous Year

SERVICE	TEXAS 2000	TEXAS 1998	US 1998	HP 2010 GOAL*
A1c test	85.6	67.5	24	50
Foot Exam	61.0	57.2	55	75
Flu Shot (all groups)	43.9	31.6		
Flu – Black	52.0	45.1		
Flu – Hispanic	38.2	43.0		
Eye Exam (all groups)	63.1	59.6	47	75
Eye – Black	60.0	58.8		
Eye – Hispanic	55.8	56.5		
Diabetes Class**	53.1	NA	45	60

* Goal included in Healthy People 2010, the Department of Health and Human Services' nationwide health promotion and disease prevention agenda

** The survey question was: "Have you ever taken a course or class in how to manage your diabetes yourself?"

conducted in three selected areas: El Paso, Laredo, and Hidalgo-Cameron counties.

MIS Pilot Site

Texas was one of 14 pilot sites to use and evaluate an electronic, internet-based management information system (MIS) developed by the Centers for Disease Control and Prevention, Division of Diabetes Translation. This system is used to collect information about diabetes control program activities. The MIS can provide rapid responses to information requests and effectively use program information to address national diabetes issues. The first live version of the MIS was released in August 2001, and CDC continues to enhance this system.

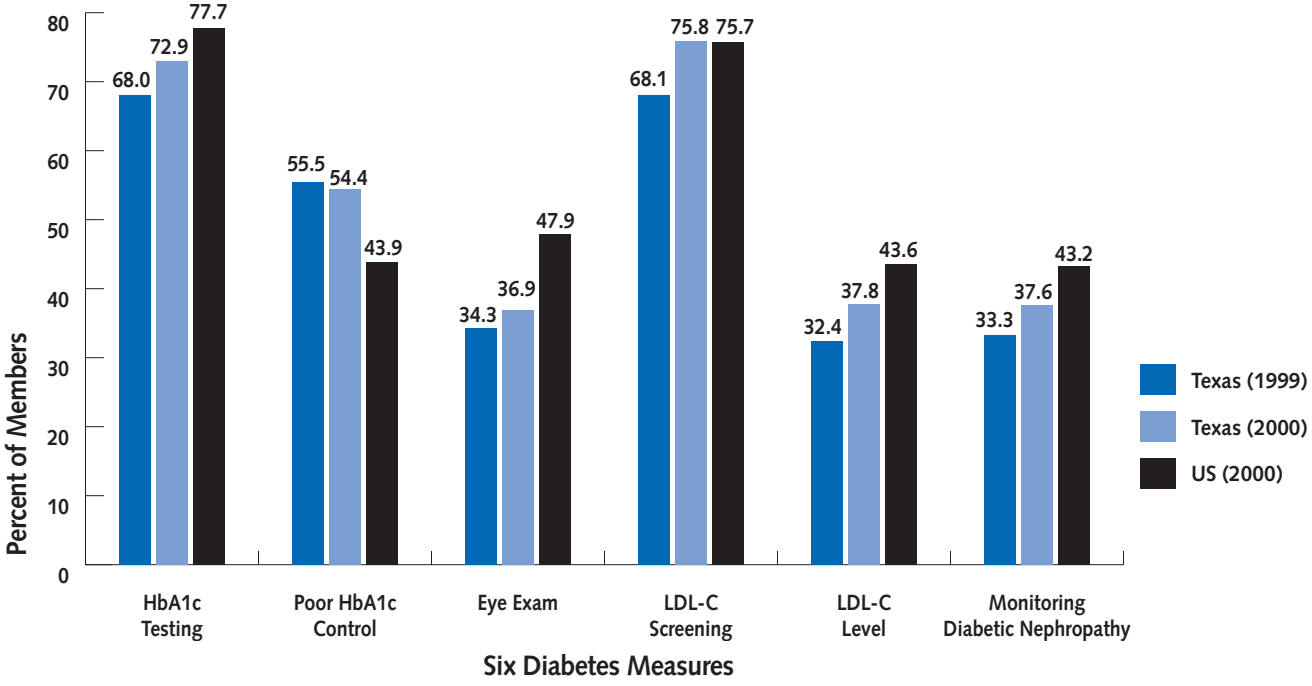
HEDIS: Health Care Plan Performance

In 2001, the Diabetes Council/Program received reports from the Health Plan Employer Data and Information Set (HEDIS). State law requires basic service health maintenance organizations (HMOs) to report HEDIS measures, including six measures related to diabetes, to the Texas Health Care Information Council (THCIC). THCIC was created in 1995 to establish the state's health care data collection system. Findings from 1999 and 2000 chart reviews conducted by the HMOs indicate important progress in delivering care to people ages 18 to 75 years who have diagnosed diabetes, but Texas falls behind the US 2000 nationwide average (of 270 health plans and called Quality Compass). HEDIS does not include Medicare or Medicaid non-managed care plans nor self-insured HMOs that are not regulated by the Texas Department of Insurance.

Medicare

The Center for Medicare and Medicaid Services (CMS), a federal agency within the US Department of Health and Human Services that runs the Medicare and Medicaid programs, has contracted with Texas Medical Foundation (TMF) to conduct the Diabetes Quality Improvement Project (DQIP). TMF is the Medicare Quality Improvement Organization

FIGURE 3:
Comprehensive Diabetes Care: HEDIS Measures for Texas, 1999 and 2000 data
State of Texas vs. U.S. Average



(QIO) for Texas, one of 53 QIOs that work with CMS to monitor and improve utilization and quality of care for Medicare beneficiaries. In the DQIP and the more comprehensive Rural Health Clinic Diabetes Project, TMF monitors three quality indicators and shares their findings with the Texas Diabetes Council and its Outcomes and Standards Compliance Advisory Subcommittee. The quality indicators for the DQIP are annual hemoglobin A1c testing, biennial dilated eye exam, and biennial lipid profile.

Health Care Improvement/ Professional Education

Texas Diabetes Health Care Professionals

In 1995 the Texas Diabetes Council Managed Care Work Group developed *Minimum Standards for Diabetes Care Under Managed Care in Texas* to be followed when treating patients who have diabetes. The title was changed in 1999 to *Minimum Standards for Diabetes Care in Texas* to reflect the Work Group's consensus that these standards should be met under all types of health care plans and delivery systems. They are used to define minimum benefits for health plans regulated by the Texas Department of Insurance.

In the year 2000 the Managed Care Work Group reorganized to form the Texas Diabetes Health Care Professionals (TDHCP) Advisory Committee to the Diabetes Council and now includes three work groups: Standards of Care Development and Update, Materials Dissemination and Distribution, and Outcomes and Standards Compliance.

TDHCP meets in conjunction with Diabetes Council meetings to pursue excellence in care for Texans with diabetes. Their key activities include:

- Publish and distribute more than 7,000 copies of the *Diabetes Tool Kit*, a comprehensive teaching aid for diabetes health care professionals;
- Distribute the *Minimum Standards for Diabetes Care in Texas* (1999) to managed care companies, health plans, physicians, and employer groups throughout Texas;
- Develop, update, and distribute step-by-step diabetes treatment guidelines, or algorithms, for use in primary care settings to deliver individualized care addressing medical nutrition therapy, physical activity, glycemic (blood sugar) control, lipids, and high blood pressure;
- Produce or co-sponsor continuing medical education for primary care physicians and other health care providers; and
- Develop methods to evaluate the extent to which recommended care is delivered, e.g., measuring glycosylated hemoglobin (A1c) [19] and trends in patient status, e.g., A1c levels for population groups.

Diabetes Learning Collaborative

The Texas Diabetes Council/Program supports the federal Health Resources and Services Administration, the Texas Association of Community Health Centers, and participating community health centers in the Diabetes Learning Collaborative. The Diabetes Learning Collaborative is one of several model quality improvement systems of care for chronic diseases, including cardiovascular disease, asthma, HIV/AIDS, and depression.

The Diabetes Learning Collaborative improves the delivery of care by changing the way staff provide care, by helping patients set personal goals to manage and improve their own condition, and by reaching out to local organizations for help with activities like health promotion classes. The changes are based on models that have been shown through research and evaluation to delay or prevent the complications of diabetes.

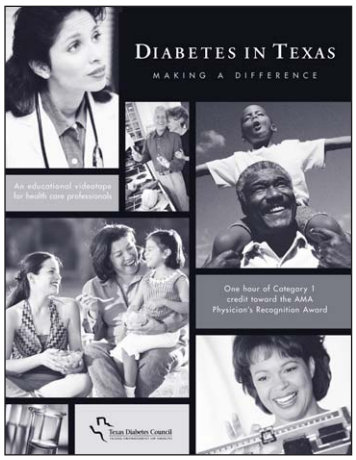
In support of the Collaborative, TDC/P furnishes professional education, patient education materials, algorithms, standards of care, and linkages to other diabetes resources. The Texas Diabetes Council/Program enhances the Diabetes Learning Collaborative in Texas with the Capacity and Infrastructure Development (CID) Program.

Capacity and Infrastructure Development

The Texas Diabetes Council/Program funds the Capacity and Infrastructure Development (CID) grant, awarded to the

Texas Association of Community Health Centers (TACHC). The goals of this grant are to:

- Eliminate health disparities, i.e., improve the health status of underserved, uninsured populations and ethnic minorities in Texas;
- Establish the capacity to develop and disseminate significant changes in public primary care systems for diabetes care; and
- Provide clinicians with the tools and resources needed for high-quality health care, a productive work environment, and strong clinical leadership.



The CID project is underway in nine Texas health centers, or sites – four original sites and five other clinics under the health centers' service areas called spread sites. These nine sites strive to implement the chronic care model promoted by the federal Bureau of Primary Health Care's National Collaborative to Reduce Health Disparities (http://www.healthdisparities.net). The model has four main components:

- **Patient registry** – Identify the center's patients who have diabetes, the care they have received, additional care they need, and their health status outcomes;
- **Decision support** – Adopt a standard of care; distribute a standard set of protocols; support consistent practice, procedures, and outcomes;
- **Delivery system redesign** – Emphasize regular and follow-up care rather than treatment of acute illness episodes; and
- **Self management** – Focus on education and support to develop patient skills and change behaviors rather than just provide information; help patients set goals and be proactive in managing their disease.

As of June 30, 2002, more than 2,600 Texas patients with diabetes were enrolled in center-specific registries. More than 81 percent of patients in the registries received at least one documented hemoglobin A1c test and 51 percent received two A1c tests at least three months apart within a 12-month period. The average A1c was below 8.4 percent. (The Texas Diabetes Council recommends an A1c level of less than 7.0 percent.) More patients also receive regular blood pressure and cholesterol checks, routine foot exams, and annual dilated eye exams.

Since self-management skills and habits are as important as clinical care for diabetes, clinics must show how patients are involved in their care. One third of all patients have self-management goals.

Professional Preparation and Continuing Education

The Texas Diabetes Council/Program has offered continuing medical education (CME) for primary care physicians since 1995. The Diabetes Council's most recent activities in continuing medical education have focused on producing a videotape for health care professionals. Nearly 1,500 copies of the tape *Diabetes in Texas: Making a Difference* have been distributed, and it can be viewed on the Internet at: http://www.tdh.state.tx.us/phpep/cme/diabetes.

The video features nationally recognized diabetes experts discussing:

- Epidemiological trends related to type 2 diabetes,
- Pathogenesis of type 2 diabetes,
- Principal research findings,
- Clinical standards for diagnosing type 2 diabetes,
- The recommended approach for managing type 2 diabetes, and
- Guidelines for the use of oral agents and insulin.

Physicians and others who view the tape and successfully complete a 10-question test can receive one hour of continuing medical education credit under Category 1 of the Physician's Recognition Award of the American Medical Association. This award is the most widely accepted certificate for recognizing physician completion of continuing medical education, and Category 1 is the benchmark for quality in formally organized educational programs. Viewers can print their

own CME certificate on the computer, and there is no charge for Texas residents.

In addition to producing the videotape, the Diabetes Council is building partnerships with institutions that offer continuing education and exploring opportunities to support content related to diabetes. In 2001 and 2002, the Diabetes Council cosponsored the Diabetic Foot Update Conference in San Antonio and the South Texas Diabetes Consortium's Biennial Conference. In addition, the Diabetes Council provides brochures and handout materials that support numerous local educational activities.

In the area of professional preparation, in 2002 the chair of the Diabetes Council initiated visits with representatives of the state's health science centers to assess the need to increase diabetes content in courses for health care professionals. The visits also establish partnerships to assure that the schools' leaders have an opportunity to take advantage of the expertise of the Diabetes Council.

Web Page Improvements

The Diabetes Council expects to complete a redesigned and improved web page in 2003. The new format will be more comprehensive, authoritative, and user-friendly and will feature a sub-site for health care professionals. Other proposed sub-sites provide information for people with diabetes and their families, health plans and purchasers (employers), parents of children with diabetes, policymakers, community-based diabetes programs, and the media. Among the objectives of the redesigned web site are to:

- Provide public information on the types, risks, prevention, early detection, diagnosis, and management of diabetes;
- Serve as the state resource for diabetes statistics and data; and
- Provide continuing education for physicians and other health care professionals.

Service

Diabetic Eye Disease Program

The Diabetic Eye Disease Program (DEDP) helps prevent blindness by providing annual funduscopic examinations to people with diabetes. In a funduscopic examination, the pupil is dilated, allowing an ophthalmologist or optometrist to see the back of the eye and identify proliferative diabetic retinopathy (damage to the blood vessels in the retina) and other conditions that can lead to blindness.

Proliferative diabetic retinopathy is the leading cause of blindness in the United States among adults 25 to 74 years of age. Diabetes also increases the risk for glaucoma and cataracts.

The DEDP pays for up to three eye examinations in a 12-month period for people who have incomes below 150 percent of poverty and lack other insurance coverage. Children also are eligible. Approximately 350 opthalmologists and licensed optometrists in Texas participate in the program.

The DEDP has grown substantially over the last seven years. The number of eye examinations increased from 2,996 in fiscal year 1995 to more than 6,300 in fiscal year 2001.

In addition to the funduscopic eye examination, participating optometrists and opthalmologists provide the following:

- Record of visual symptoms;
- Evaluation of visual acuity;
- Assessment of visual field, muscle function, and lens opacity;

- Measurement of intraocular pressure;
- Classification of eye pathology; and
- Recommendations for treatment/care.

Public Health Education

Public Information Campaign

The Texas Diabetes Council/Program's public information campaign promotes early diagnosis and careful management of diabetes, which can help patients delay or prevent serious complications.

In fiscal year 2002, the Diabetes Council sponsored a television and radio campaign to increase public awareness of diabetes, conducted a communications audit, and redesigned its exhibit.

In the interest of being cost effective, the fiscal year 2002 television and radio campaign used radio and television announcements that were developed earlier through the Texas Diabetes Prevention and Control Initiative. The messages, which were produced in both English and Spanish versions, educate listeners and viewers about the risk factors for diabetes and the importance of controlling diabetes. During August and September 2002 the announcements ran in the Lower Rio Grande Valley and Corpus Christi, two markets that have a high incidence of diabetes. The media used in these areas reach 70 to 98 percent of the target market – men and women 35 years of age and older, including ethnic minority populations.

The second major component of the 2002 media campaign, a communications audit, was a comprehensive evaluation of the Diabetes Council's print materials. The audit examined publications for patients, the general public, and health care professionals. Using focus groups, interviews, and surveys, input was gathered from representatives of community-based organizations, pharmaceutical companies, and the Diabetes Program staff.

This input will be analyzed and will be the basis of recommendations to assure that printed materials effectively support the Diabetes Council/Program's educational activities. Implementation of the recommendations began in 2002 and will continue through the coming biennium.

Based on the audit, a new logo was designed to graphically convey the message that the Texas Diabetes Council is an authoritative and concerned leader in the state's efforts to prevent and control diabetes.

TEXAS DIABETES
COUNCIL

The third major component of the media campaign was the design and production of an enhanced exhibit. The new exhibit features specialty items that increase the recognition of the Diabetes Council. Using the new exhibit and maximizing the use of limited resources, the Diabetes Council has been able to participate in statewide conferences of health care professionals, including those of the Texas Medical Association, the Texas Academy of Family Physicians, the Texas Association of School Nurses, the Texas Minority Health Conference, and the Texas Conference for Women. These exhibitions have offered numerous opportunities to share information about the Texas Diabetes Council and the resources it has to offer health care professionals and the general public.

In a separate activity that helped increase public awareness of diabetes, Council members participated in three special events conducted in September 2002 in support of the Governor's Diabetes Education Initiative.

Educational Materials

The Texas Diabetes Council/Program offers easy-to-read, low-literacy publications in English and Spanish. Brochures and posters are among the offerings, which are available at no charge on request. TDC/P also works with national-level partners to educate the public about risks for diabetes, how to prevent or delay type 2 diabetes, how to manage diabetes, and how

to avoid or delay its complications. During fiscal year 2001, the diabetes program distributed more than 600,000 pieces of printed materials.

Among the Diabetes Council's publications for the public are the following:

- ***You Have the Power: Controlling Diabetes One Day at a Time,*** a kit designed to support educational classes or groups, including advice and information on diabetes and medicines, low blood sugar, heart health, foot and eye care, family support, and kidney disease;
- **Food for Life: Living Well with Diabetes**, a booklet describing healthy eating habits and dietary choices;
- **Diabetes Card,** a wallet-size card for recording results of medical examinations;
- **Foot Poster**, a colorful reminder that patients who have diabetes should remove their shoes for a foot examination at health care visits;
- **Could You Have Diabetes**? a quiz that encourages patients to share information about their risk factors and symptoms with their physician; and
- **Living with Diabetes**, a brochure that includes tips for managing diabetes and to-do lists for before, during, and after a doctor visit.

In addition to these, the Council publishes the *CornerStone* newsletter, which updates readers on programs, activities, legislation, and other news about diabetes. It is distributed to approximately 18,000 diabetes professionals and others throughout the state. Other publications for health care professionals include the *Diabetes Tool Kit* and medical nutrition, lipid, glycemic control, physical activity, and hypertension treatment algorithms.

National Diabetes Education Program

The Texas Diabetes Council supports the National Diabetes Education Program (NDEP) by distributing public awareness materials and promoting the use of NDEP resources by community-based organizations. These resources include materials for people with diabetes, health care providers, and organizations, and media kits. Some of the materials are available in Spanish, as well as Asian and Pacific Islander languages.

NDEP is a federally sponsored initiative that involves more than 200 public and private partners to improve treatment and outcomes for people with diabetes. It is a joint initiative of the National Institutes of Health (NIH), the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), and the Centers for Disease Control and Prevention (CDC).

NDEP addresses two documented needs. First, current scientific evidence demonstrates that much of the morbidity and mortality of diabetes can be eliminated by aggressive treatment with diet, physical activity, and new pharmacological approaches to normalize blood glucose levels. Unfortunately, a wide gap still exists between current and desired diabetes care and practices. Second, public awareness about diabetes is low, despite the fact that the disease is one of the leading causes of death and disability in the United States.

The most recent additions to the NDEP library of educational resources relate to the link between diabetes and heart disease, which is the leading cause of death among people with diabetes. Other recent publications address prevention of diabetes, diabetes in children and adolescents, and Medicare coverage for blood sugar testing. A campaign based on a recent study demonstrating that type 2 diabetes can be delayed or possibly prevented in people who have pre-diabetes [20] is in development.

NDEP resources have been featured in the *CornerStone* newsletter and the *Diabetes Tool Kit.* The Diabetes Council also has used television and radio announcements produced by NDEP as part of its annual media campaign.

CDC Diabetes and Flu/Pneumococcal Campaign

The Diabetes and Flu/Pneumococcal Campaign is part of an ongoing public service campaign called **Diabetes. One Disease. Many Risks.** The goal of this CDC campaign is to reduce other illnesses faced by people with diabetes, including the increased risk of death from influenza and pneumonia.

The Texas Diabetes Council, in partnership with other Texas Department of Health programs, assists the flu campaign and serves as a clearinghouse for distribution of these materials. The Texas Diabetes Program distributed more than 4,000 brochures and posters during the 2001-2002 campaign. In addition, community-based organizations in Texas delivered immunization information to 750 individuals.

The CDC notes that during flu epidemics, death rates among people with diabetes increase by 5 to 15 percent. Although people with diabetes are more likely to die with the flu, research indicates that in 2000, less than half (44 percent) received a flu shot.

Campaign elements include television, radio, and print public service announcements (PSAs); an educational consumer brochure; a poster; health care professional and consumer post cards; a sample press release; and media kits. Some PSAs were developed especially for Hispanic/Latino and African-American audiences.

Public Health Advocacy

Advocacy and Coordination

As elected officials attempt to improve the health of both the citizens and the economy of Texas, diabetes comes quickly to the forefront as a statewide problem, affecting all ages and ethnic groups. The Texas Diabetes Council is a valuable resource for legislators who are considering this issue. In this role, Diabetes Council members and legislators establish working relationships that are crucial in efforts to prevent and control diabetes and its complications throughout the state.

The Diabetes Council also is represented on the Texas Diabetes Advocacy and Coordinating Work Group (ACWG). The ACWG's membership includes Texas representatives of the American Diabetes Association, Juvenile Diabetes Research Foundation International, American Dietetic Association, and American Association of Diabetes Educators, who investigate new ways to effectively meet health challenges related to diabetes. The Work Group meets quarterly and identified four priority issue areas to address during the 78th Texas Legislature:

- Professional education,
- School health,
- Public awareness, and
- Insurance coverage.

Children and Youth at Risk or With Diabetes

The impact of diabetes in Texas is multiplied due to the growth and ethnic diversity of the population. In the 2000 US census, 28 percent of the Texas population was under 18 years of age. In South Texas, those under 18 comprised 32 percent of the population.

Diabetes in childhood is mainly type 1, an autoimmune disorder that destroys insulin-producing cells, requiring multiple daily insulin injections or a pump. It is estimated that approximately 1 in 400-500 (10,000) Texas children have type 1 diabetes. However, type 2 diabetes is emerging as a higher proportion of pediatric diabetes, representing almost 50 percent of new diabetes cases diagnosed by endocrinologists. At least 13,000 children have type 2 diabetes, and the number of youth with type 2 diabetes is likely to triple by 2025 – a huge change for any condition – unless primary prevention is strengthened.

While some risk factors for type 2 diabetes cannot be controlled, others can. Type 2 diabetes appears to have a genetic basis, which is beyond an individual's control. But it also is related to obesity and sedentary lifestyle, which, with few exceptions, can be controlled through diet and physical activity. Studies show that, regardless of ethnic-

Victoria Ford of Governor Rick Perry's office, right, presents the Governor's proclamation designating November as Diabetes Month in Texas and recognizing the work of the Texas Diabetes Council to Lawrence B. Harkless, DPM.

ity, more than 20 percent of severely overweight children and adolescents have Impaired Glucose Tolerance, or pre-diabetes.[21]

Lifestyle is key to being fit and preventing obesity, and, for many, lifestyle habit changes are urgently needed. The family is primary, but school and community must be included in instituting and supporting positive dietary and physical activity changes. Children are influenced by and limited by their environment. Maintaining a diet balanced in fat calories and nutrients, increasing moderate to vigorous physical activity to at least 30 minutes a day, and limiting sedentary activities are essential lifestyle changes that need reinforcement.

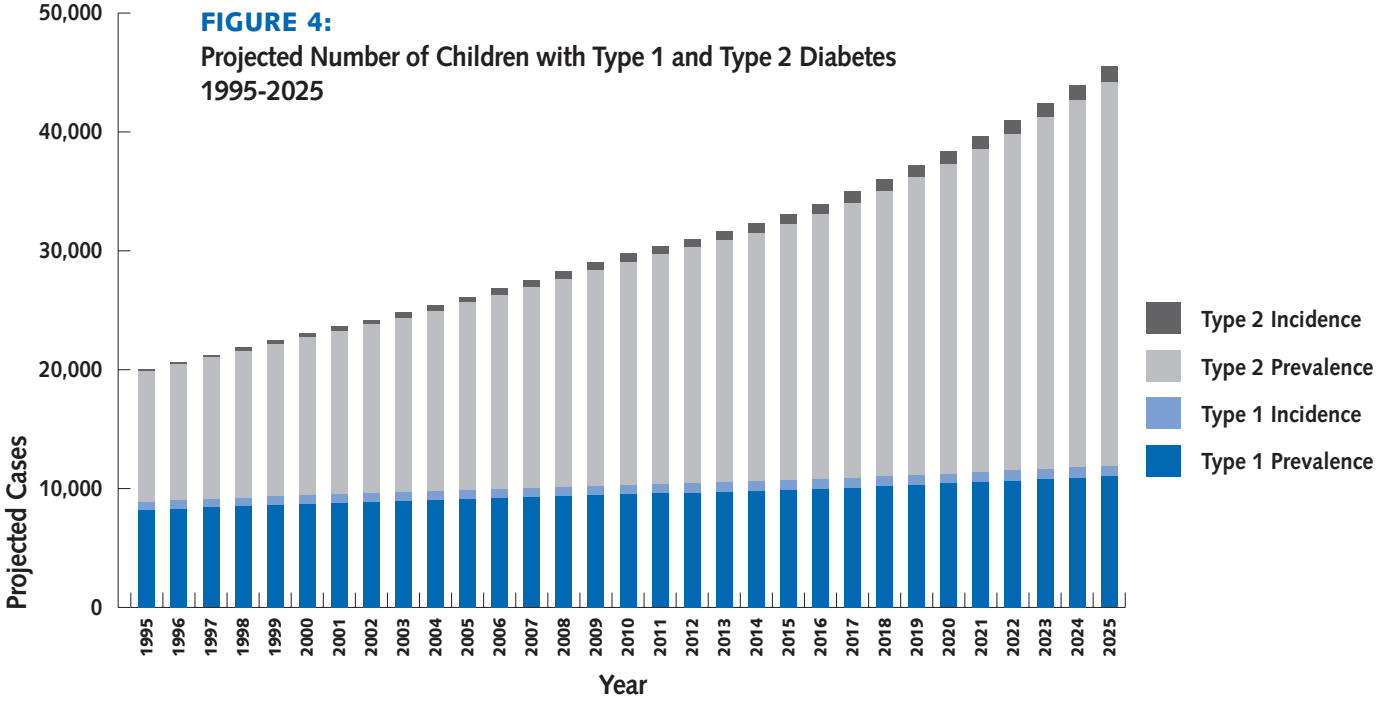
Children and adolescents with type 2 diabetes in Texas are disproportionately of Hispanic, American-Indian, and African-American heritage. Children in these ethnic groups who have type 2 diabetes usually are overweight, and their immediate families are overweight and have a high incidence of type 2 diabetes. A Texas study showed that during 2000 and 2001, among African-American children, 48.7 percent of fourth graders, 31.4 percent of eighth graders, and 44.7 percent of eleventh graders were overweight. The same study showed that among Hispanic children, 44.9 percent of fourth graders, 45.0 percent of eighth graders, and 41.8 percent of eleventh graders were overweight. But overweight is reaching epidemic proportions among children in all ethnic groups. If this trend continues, the rate of type 2 diabetes in children in all ethnic groups also will grow dramatically.

The Diabetes Council/Program advocates for children at risk for or with diabetes through key activities in the following areas:

Texas Pediatric Diabetes Research Advisory Committee. During the 77th Texas Legislature, the Texas Diabetes Council was instrumental in the passage of a landmark bill that created the Pediatric Diabetes Research Advisory Committee (Senate Bill 1456/House Bill 3155). The charges to the Committee were to:

- Develop a plan to research pediatric diabetes and associated medical conditions in Texas,
- Assess the resources and talent of institutions in Texas as possible sites for research opportunities,
- Analyze the impact of diabetes on the economy of Texas and on the health of its residents, and
- Make recommendations to the Legislature and the Governor concerning research programs in pediatric diabetes and funding alternatives for the programs.

FIGURE 4:
Projected Number of Children with Type 1 and Type 2 Diabetes 1995-2025



The legislation required the Commissioner of Health in consultation with the Texas Diabetes Council to appoint Committee members, including representatives of the Council, the Texas Department of Health, Juvenile Diabetes Research Foundation International, American Diabetes Association, academic or biomedical research institutions, and the health care industry.

The Committee submitted a report to the Governor, Lieutenant Governor, and Speaker of the House of Representatives at the end of 2002 and recommended:

- That diabetes diagnosed before age 21 years be a reportable condition to the Texas Department of Health and
- That the Legislature establish the Texas Pediatric Diabetes Research Resource.

The Diabetes Program staff facilitated the work of the Pediatric Diabetes Research Advisory Committee. Data collection related to the incidence and prevalence of type 2 diabetes in children and adolescents was a primary component of the Committee's work.

Professional Education. The Diabetes Program staff published an article to explain acanthosis nigricans, a skin marker associated with high blood insulin levels. This marker usually is seen in overweight youth or adults, especially those who also tend to store extra fat around the waist rather than the hips and thighs. If they have immediate family with type 2 diabetes or they have other conditions (high blood pressure and/or high cholesterol), they need to be evaluated for diabetes or other metabolic conditions and, as needed, advised to lose excess weight through increased daily activity and meal plan changes.

The article, "Acanthosis nigricans and insulin resistance," appeared in the January 2002 edition of *Disease Prevention News*, a bimonthly publication of the Texas Department of Health. *Disease Prevention News* is distributed throughout the state to physicians, school nurses, nutritionists, public health professionals in regional health departments, and interested professionals in private and public agencies.

Consulting Services. Diabetes Program staff serves as a resource for schools, parents, and physicians on issues related to type 1 and type 2 diabetes care for children and youth. Staff members are available for consultation with primary care providers and school personnel who want to help students with type 1 diabetes engage in necessary self care at school. The staff reviews school guidelines prepared by the School Health Program in the Texas Department of Health and similar programs in other states, participates in events for school nurses and the TDH School Health Advisory Committee, and examines insurance plans, including the Children's Health Insurance Program, TDH Children with Special Health Care Needs Program, and Medicaid, to help families access resources, such as insulin pumps.

Staff consulted on *Health in Action: Diabetes*, a national publication outlining school issues and support needs for students with type 1 or type 2 diabetes, and sent the new reference to 1,000 Texas school districts.

Liaisons. The Texas Diabetes Council and Program staff attended the TDH Obesity Task Force as key stakeholders in the process to craft a state plan targeting children and their families.

Physical Activity. The Texas Diabetes Council advocated for Senate Bill 19 during the 77th Texas Legislature. This bill amended the Education Code to authorize the State Board of Education to require elementary school students to participate in daily physical activity as part of a school district's physical education curriculum. The State Board of Education (SBOE) adopted the new requirement in the spring of 2002, and each school district is required to implement a program approved by the agency in each elementary school in the district no later than September 1, 2007. Senate Bill 19 also requires the Texas Education Agency to make a coordinated health program available to each school district and to notify each district of the availability of the program.

Eduardo Sanchez, MD, Commissioner of Health, and Lawrence Harkless, DPM, chair of the Texas Diabetes Council, were among supporters who addressed the board during its public hearing on the rule.

Community Outreach and Programs

Community-Based Organizations

The Texas Diabetes Program is one of 16 comprehensive state diabetes control programs that receive assistance from the Division of Diabetes Translation, Centers for Disease Control and Prevention, US Department of Health and Human Services.

These funds help state health departments:

- Build expertise in program, science, and policy areas to prevent and control diabetes;
- Coordinate statewide diabetes prevention and control efforts;
- Expand systems to define and analyze the scope of the diabetes problem;
- Improve access to diabetes care for all people and raise the quality of that care;
- Use statewide public health projects to reduce diabetes-related problems; and
- Inform, educate, and empower external supporters to prevent and control diabetes.

To achieve these goals, the Texas Diabetes Program contracts with 15 organizations (local health departments, TDH regional health departments, community health centers, and grassroots organizations) serving 82 counties in Texas. These programs have demonstrated success in establishing useful programs for promoting wellness, physical activity, weight and blood pressure control, and smoking cessation for people with diabetes. All of these community-based organizations (CBOs), which are found in both rural and urban settings, target racial and ethnic minorities who have disproportionate rates of diabetes and limited access to health services.

Recent accomplishments by the CBOs include:

Community Policy/Environmental Changes. The El Paso Independent School District Board voted to limit sodas in school vending machines and to offer water and fruit juices with a high percentage of natural fruit juices. The El Paso Diabetes Association's Diabetes Awareness and Education in the Community (DAEC) Project was an advocate for this change.

Walking Activities. Many CBOs have implemented interventions to increase physical activity in their communities. Notably, Laredo sponsored a "Walk to School Day" in collaboration with several community partners. They also sponsored a school poster contest promoting the benefits of walking. The "Walk, Texas!" program has increased activities in Austin/Travis County, El Paso, Laredo, San Antonio and the Tri County project (Brewster, Presidio, and Jeff Davis counties). Several city programs have expanded to include the county. San Antonio's "Fit City" is such a countywide initiative. Uvalde and Amarillo hold yearly "Walk Across Texas" events in collaboration with their county extension agents.

Self-Management Education and Support Groups. CBOs offer classes and support groups that educate people with diabetes about nutrition, physical activity, weight and blood pressure control, medications, emotional issues, and effective communication with family, friends, and health professionals. Sessions are offered in senior centers, churches, libraries, hospitals, health centers, and other community settings throughout Texas. In addition to English, classes are offered in Spanish, Chinese, or Vietnamese.

Innovative Marketing. Community-based organizations developed creative approaches to educating their target audiences about the prevention and control of diabetes. The following examples illustrate some of the ways they have tailored their messages to acknowledge the unique characteristics of their varied audiences.

- ***Diabetes & the Rhythm of Life/Diabetes y el Ritmo de la Vida.*** The El Paso Diabetes Association DAEC project created and sponsored this original musical production in collaboration with other community partners. A post-production evaluation showed that audience members increased their knowledge of diabetes, ate more fruit, and increased physical activity. The program is available for other communities to produce.

- **Weekly Radio Addresses.** The City of Dallas DAEC project coordinator hosts a community weekly radio show that reaches a listening audience of 20,000 people. She provides health tips on the prevention and management of a variety of chronic diseases, especially diabetes, heart disease, and high blood pressure, and she explains how they are inter-related. In addition to emphasizing the importance of physical activity and healthy eating, she regularly conducts interviews with policy makers, health professionals, and local personalities.
- **Promotional Reminders.** Amarillo promotes increased water consumption to people of all ages by distributing bottled water labeled with a prevention message, "Control Diabetes Before It Controls You." They reach children and youth through a book cover contest promoting healthy eating and physical activity. The winning cover is distributed to schools throughout the Panhandle. Frisbees with similar messages for children are given away at local health fairs.
- **New Education Venues.** Austin Travis County's Diabetes and Wellness Network (DAWN) Project places wellness messages at local cinemas, targeting youth and parents with messages about food-portion control and physical activity.

Eliminating Health Disparities. Community-based programs work to address health disparities, the issue of populations whose health status is poorer than that of the overall population due to ethnic or economic differences, geography, age, or sex. Following are descriptions of their activities in this area.

- **Multilingual Information.** The Harris County Hospital District has collaborated with the Houston Academy of Medicine, the Texas Medical Center Library, and the Asian American Health Coalition to produce eight health information kiosks about diabetes. The project created culturally and linguistically appropriate educational presentations and materials in both Vietnamese and Chinese. The kiosks were set up at seven Asian community sites in Houston.
- **Migrant Populations.** The Migrant Clinicians Network Diabetes Program works to improve the health of individuals who have diabetes and who move for work purposes throughout the year. Patient health is improved through a medical records transfer system, phone-based case management, and education and support for clinicians. The program also provides education to individuals and communities.
- **Professional Education.** The Lado a Lado Project of Gateway Community Health Center in Laredo led a community coalition that sponsored the third Diabetes in the New Millennium program, a regional continuing medical education conference, in June 2002. The event offered continuing education credits and also featured exhibits.
- **Prevention and Control.** Gateway Community Health Center offers its diabetes self-management education classes and activities to not only people with diagnosed diabetes, but also people with Impaired Glucose Tolerance, or pre-diabetes. This activity is expected to lower the risk of developing diabetes for people who have pre-diabetes.

The community-based organizations funded for 2001-2003 are:

- Austin/Travis County Health and Human Services, Austin;
- Bexar County Hospital District, San Antonio;
- City of Dallas Environmental and Health Services, Dallas;
- City of Fort Worth Public Health Department, Fort Worth;
- Coalition of Health Services, Inc., Amarillo;
- Community Health Development, Inc., Uvalde;
- Dallas Concilio of Hispanic Service Organizations, Dallas;
- El Paso Diabetes Association, El Paso;
- Gateway Community Health Center, Inc., Laredo;
- Harris County Hospital District, Houston;
- Migrant Clinicians Network, Inc., Austin (statewide);
- Smith County Public Health District, Tyler;
- Texas A&M University Bilingual Diabetes Awareness Program, Rio Grande Valley;

- Texas Department of Health Public Health Region 4/5 North, Tyler; and
- Tri-County Diabetes Awareness and Education, Marfa.

Walk Texas!

"Walk Texas!" was initiated in 1996 to address the increasing problem of sedentary lifestyles among adult Texans. "Walk Texas!" is a community-based program whose mission is to promote the health of Texans by increasing awareness and opportunities for individuals to engage in regular physical activity and sound nutritional practices. Walking is one of the safest and most natural forms of physical activity that can help prevent and manage diabetes and other chronic health conditions. The Diabetes Council/Program contracts with the University of Texas at Austin to implement the program.

"Walk Texas!" takes a multifaceted approach to promoting physical activity and sound nutrition through five key initiatives:

- Organizing physical activity groups;
- Supporting and advocating for environments conducive to physical activity;
- Planning media and special events;
- Building physical activity coalitions; and
- Counseling by health care providers for physical activity, nutrition, and tobacco assessment.

The *Clinicians' Guide for the Assessment and Counseling of Physical Activity, Nutrition & Tobacco* supports the last initiative. The guide provides a theoretically based, standardized approach for assessment and counseling of lifestyle behaviors and is used in primary care settings to reinforce physical activity and nutrition messages during health care visits.

To help communities plan and promote physical activity and sound nutrition, the "Walk Texas!" team developed four publications: *Quick Start Guide, Event Planning Guide, Walking/Biking Guide,* and *Media Guide.* These booklets are available on the TDH website (http://www.tdh.state.tx.us/diabetes/walktx/index.html). The University of Texas staff works with the Diabetes Awareness and Education in the Community (DAEC) programs to identify environmental/advocacy, special events, media, and physical activity interventions that will help improve physical activity behaviors in their communities. Interventions are targeted to populations at risk for diabetes. The UT staff also helps the DAECs integrate "Walk Texas!" into other physical activity programs such as "Walk Across Texas" (a six-week program) and "Texercise" (for senior residents) in their communities.

Coordinated Approach to Child Health (CATCH)

The Coordinated Approach to Child Health (CATCH) is a culturally appropriate program for elementary schools. CATCH coordinates health education, physical education, school food services, and parental involvement to increase positive behaviors and habits related to physical activity and nutrition. In 2002, an instructional unit on diabetes was added to the education component.

A three-year randomized trial in 96 elementary schools in four states, enrolling 5,000 ethnically diverse third graders, demonstrated that CATCH is effective and has long-term benefits. Intervention schools lowered the fat content of school lunches, increased moderate-to-vigorous physical activity within physical education, and promoted the importance of regular physical activity and healthy diets through health education cur-

ricula and family involvement. These intervention strategies significantly increased the intensity and duration of physical activity and decreased the caloric (energy) intake from fat in intervention school lunches. Three years after completing the CATCH program, intervention students still reported lower fat intake and more vigorous physical activity than control students.

To translate CATCH research into practice, Center for Health Promotion and Prevention Research (CHPPR) investigators at the University of Texas School of Public Health (UTSPH) work with the Diabetes Council and TDH to disseminate CATCH to elementary schools throughout Texas. The dissemination program has fostered collaboration with the State Board of Education (which officially recognizes CATCH as the elementary school diabetes health education curriculum), the Texas Education Agency's Child Nutrition Programs, several regional Education Service Centers, and private foundations.

More than 1,000 elementary schools have reviewed and adopted CATCH as a program suitable for the community. These programs benefit nearly 450,000 students. The CHPPR staff manages and evaluates the implementation of CATCH in a selected group of schools. Texas school leaders use CATCH to promote healthful practices that can reduce the rate of obesity, which is a significant risk for type 2 diabetes and cardiovascular disease in later years.

In a related effort, the Texas Commissioner of Agriculture enlisted the Texas Department of Health, the Diabetes Program, CHPPR, and others to create the Healthy Food for Healthy Kids Initiative in 2002. This nutrition program informs students in kindergarten through fifth grade about the benefits of consuming fresh Texas fruits and vegetables and participating in physical activity. Activities include in-school food tastings and retail store visits, "Kids Day" at farmers' markets, and workshops with school food services personnel.

Texas Diabetes Prevention and Control Initiative

In the summer of 1999, the Texas Diabetes Council joined forces with Bristol-Myers Squibb Company to form a public-private partnership called the Texas Diabetes Prevention and Control Initiative.

Bristol-Myers Squibb committed $1 million in funds and services – the largest private gift TDH had received to date – to a two-year pilot study, which concluded August 31, 2001. Major components of the initiative included (1) public screenings to identify people at high risk for diabetes and refer them for further testing and care, (2) an education program for health care providers, and (3) activities to alert the public to diabetes signs and symptoms and help those with diabetes manage their disease.

Three local agencies were selected through a competitive grant process to carry out the public screening component and collect related data: Baylor College of Medicine, Houston; Texas Department of Health Public Health Region 11, Harlingen; and the El Paso Diabetes Association, El Paso.

At the conclusion of the study the Initiative partners prepared a report that included 14 recommendations, which were offered as a guide to other entities that want to reach people who may have diabetes. Primary among these was the recommendation that health care providers assess risk for diabetes and consider blood testing at every service encounter. Among the other recommendations were:

- Develop best practices models based on successes in achieving patient and provider participation and patient follow-up;
- Increase the participation of local physicians by securing support from their local and state leaders, who exercise more influence than do lay persons or paraprofessionals;
- Commit funds and personnel to reinforce the public health messages developed by the National Diabetes Education Program; and
- Develop and support a system that tracks patients on a long-term basis, thus allowing programs to (1) determine whether their interventions have a significant effect on patients' health status and (2) identify trends.

TEXAS DIABETES
COUNCIL

Appendix 1

Texas Diabetes Council Membership

(From Chapter 103. Texas Diabetes Council, Vernon's Annotated Civil Statutes)

103.002 Composition of Diabetes Council: The Texas Diabetes Council is composed of 12 citizen members appointed from the public and one representative each from the Texas Department of Health, the Central Education Agency, the Texas Department of Human Services, the Texas Commission for the Blind, and the Texas Rehabilitation Commission.

The Governor, with the advice and consent of the Senate, shall appoint the following citizen members: a licensed physician with a specialization in treating diabetes; a registered nurse with a specialization in diabetes education and training; a registered and licensed dietitian with a specialization in the diabetes education field; a person with experience and training in public health policy; four consumer members, with special consideration given to people active in the Texas affiliates of the Juvenile Diabetes Research Foundation International or the American Diabetes Association; and four members from the general public with expertise or demonstrated commitment to diabetes issues.

In making appointments under this section, the Governor includes members of different minority groups, including females, African-Americans, Hispanic Americans, American Indians, and Asian Americans.

Voting Members

Lawrence B. Harkless, DPM, Chair, San Antonio
Gene Bell, RN, CFNP, CDE, Secretary, Lubbock
Mary-Ann Galley, PharmD, Houston
Victor Hugo Gonzalez, MD, McAllen
Judith L. Haley, Vice Chair, Houston
Jan B. Hamilton, PhD, RD/LD, Plainview
Richard (Rick) S. Hayley, Corpus Christi
Lenore F. Katz, Dallas
Belinda Bazan-Lara, MA, RD/LD, San Antonio
Margaret G. Pacillas, RN, CDE, El Paso
Jeffrey Ross, DPM, Houston
Mike Thompson, Jr., Austin

State Agency Representatives (Non-Voting Members)

Tommy Fleming, Texas Education Agency
Lance Hamilos, Texas Rehabilitation Commission
Philip Huang, MD, MPH, Texas Department of Health
Linda G. Robinson, Texas Commission for the Blind
Deborah Simpson, Texas Department of Human Services

For more information on the Texas Diabetes Council/Program, contact:

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Notes

1 Murdock, Steve H, Md. Nazrul Hogue, et al. The Texas Challenge: Population Change and the Future of Texas, Texas A&M University Press: College Station. 1997.

2 Unless otherwise referenced, this information is based on data from the Texas Behavioral Risk Factor Surveillance System, Bureau of Chronic Disease and Tobacco Prevention, Texas Department of Health, and the Centers for Disease Control and Prevention, US Department of Health and Human Services.

3 Based on prevalence estimate of 0.19. National Institute of Diabetes and Digestive and Kidney Diseases, 2000. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, 2002.

4 Based on prevalence estimate of 3.3 percent. National Institute of Diabetes and Digestive and Kidney Diseases, 2000. Bethesda, MD: US Department of Health and Human Services, National Institutes of Health, 2002.

5 American Diabetes Association and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK).

6 Stern M and Villalpando C. Presentation at International Diabetes Federation, Nov 5, 2000.

7 Diabetes Care 2002;25(4).

8 For more information about the diagnostic criteria for diabetes, please refer to the "Report of the expert committee on the diagnosis and classification of diabetes mellitus." Diabetes Care 2002; 25(1):12-16.

9 Except in certain specified circumstances, abnormal tests must be confirmed by repeat testing on another day.

10 Complications of Diabetes. National Institute of Diabetes and Digestive and Kidney Diseases, 2000.

11 An emergency condition in which extremely high blood glucose levels, along with a severe lack of insulin, result in the breakdown of body fat for energy and an accumulation of ketones in the blood and urine. Ketone is a chemical produced when there is a shortage of insulin in the blood and the body breaks down body fat for energy. Signs of DKA are nausea and vomiting, stomach pain, fruity breath odor, and rapid breathing. Untreated DKA can lead to coma and death.

12 An emergency condition in which one's blood glucose level is very high, but ketones are not present in the blood or urine.

13 This estimate, provided by the American Diabetes Association, is in contrast to higher estimates cited elsewhere that are based on all health care costs incurred by people with diabetes, including costs not resulting from diabetes.

14 Healthy People 2010 is a comprehensive set of health objectives for the nation to achieve over the first decade of the new century. Created by scientists both inside and outside of government, it identifies a wide range of public health priorities and specific, measurable objectives.

15 A health care professional with expertise in diabetes education who has met eligibility requirements and successfully completed a certification examination administered by the National Certification Board for Diabetes Educators. CDEs teach people who have diabetes how to manage their diabetes.

16 An act relating to health education in public schools and to the improvement of children's health through daily physical activity in public schools and a coordinated approach by public schools to prevent obesity and certain diseases.

17 US Department of Agriculture policy that prohibits schools from serving foods of minimal nutritional value in competition with reimbursable meals served under the National School Lunch and School Breakfast programs.

18 A person who, with or without compensation, provides a bilingual liaison between health care providers and patients through activities that include assisting in case conferences, providing patient education, making referrals to health and social services, conducting needs assessments, distributing surveys to identify barriers to health care delivery, making home visits, and providing language services. (Chapter 46, Texas Health and Safety Code.)

19 A test that measures a person's average blood glucose level over the past 2 to 3 months. Hemoglobin is the part of a red blood cell that carries oxygen to the cells and sometimes joins with the glucose in the bloodstream. Also called hemoglobin A1C or glycosylated hemoglobin, the test shows the amount of glucose that sticks to the red blood cell, which is proportional to the amount of glucose in the blood.

20 A condition in which blood glucose levels are higher than normal but are not high enough for a diagnosis of diabetes. People with pre-diabetes are at increased risk for developing type 2 diabetes and for heart disease and stroke. Other names for pre-diabetes are Impaired Glucose Tolerance and Impaired Fasting Glucose.

21 Gaezner H. "Impaired glucose tolerance in obese children and adolescents." N Engl J Med 2002 Mar 14; 346(11):802-810.